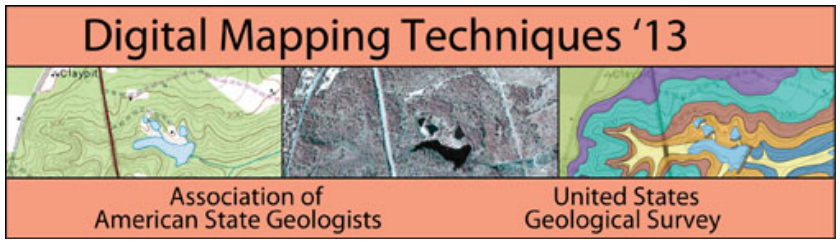


The following was presented at DMT'13
(June 2-5, 2013, Golden, CO).

The contents are provisional and will be
superseded by a paper in the
DMT'13 Proceedings.

See also earlier Proceedings (1997-2012)
http://ngmdb.usgs.gov/info/dmt/

Creating FGDC-Compliant Cartographic Representations

Patricia (Trish) Gallagher
Alaska Division of Geological and Geophysical Surveys (DGGS)
Fairbanks, Alaska

Overview of Presentation

- DGGS inclusion of USGS suggested colors into style file
- Cartographic representations and their benefits
- Translating traditional symbols into representations
- Creating pattern fill representations from scratch
- Concerns about the TM 11-B1 manual and FGDC pattern chart

USGS
science for a changing world

Suggested Colors for Geologic Maps

Techniques and Methods 11–B1
Plate 1

[This color chart shows suggested colors for different geologic ages, as well as colors for volcanic and igneous rocks. Numbers below each color box are CMYK color codes, as follows: A = 0%, 1 = 13%, 2 = 20%, 3 = 30%, 4 = 40%, 5 = 50%, 6 = 60%, 7 = 70%, 8 = 80%, 9 = 90%, X = 100%. Colors on this chart were chosen on the basis of how they look as printed on an offset printing press. As printed on an offset printing press, the colors conform to USGS geologic age color standards. However, if the digital file of this chart is printed on a computer-driven ink-jet plotter, some of the colors will not conform to the USGS geologic age colors. Users should be aware of this limitation and choose colors accordingly. Note that some of the dark combination colors (composed of high percentages of the two CM inks or the three CMY inks) are generally too dark to use for most purposes, because they can obscure topographic base features and geologic map data. On some computer-driven plotters, some of the darkest colors on this chart will print dark gray to black.]

Quaternary
Yellow, no color
Q

Tertiary
Orange, yellowish-orange, tan, brown
T

Cretaceous
Yellow green or olive green
K

Jurassic
Green
J

Triassic
Blue green
TR

Permian
Blue
P

Pennsylvanian
Blue with red
IP

Mississippian
Bluish purple
M

Devonian
Greyish purple
D

Silurian
Reddish purple
S

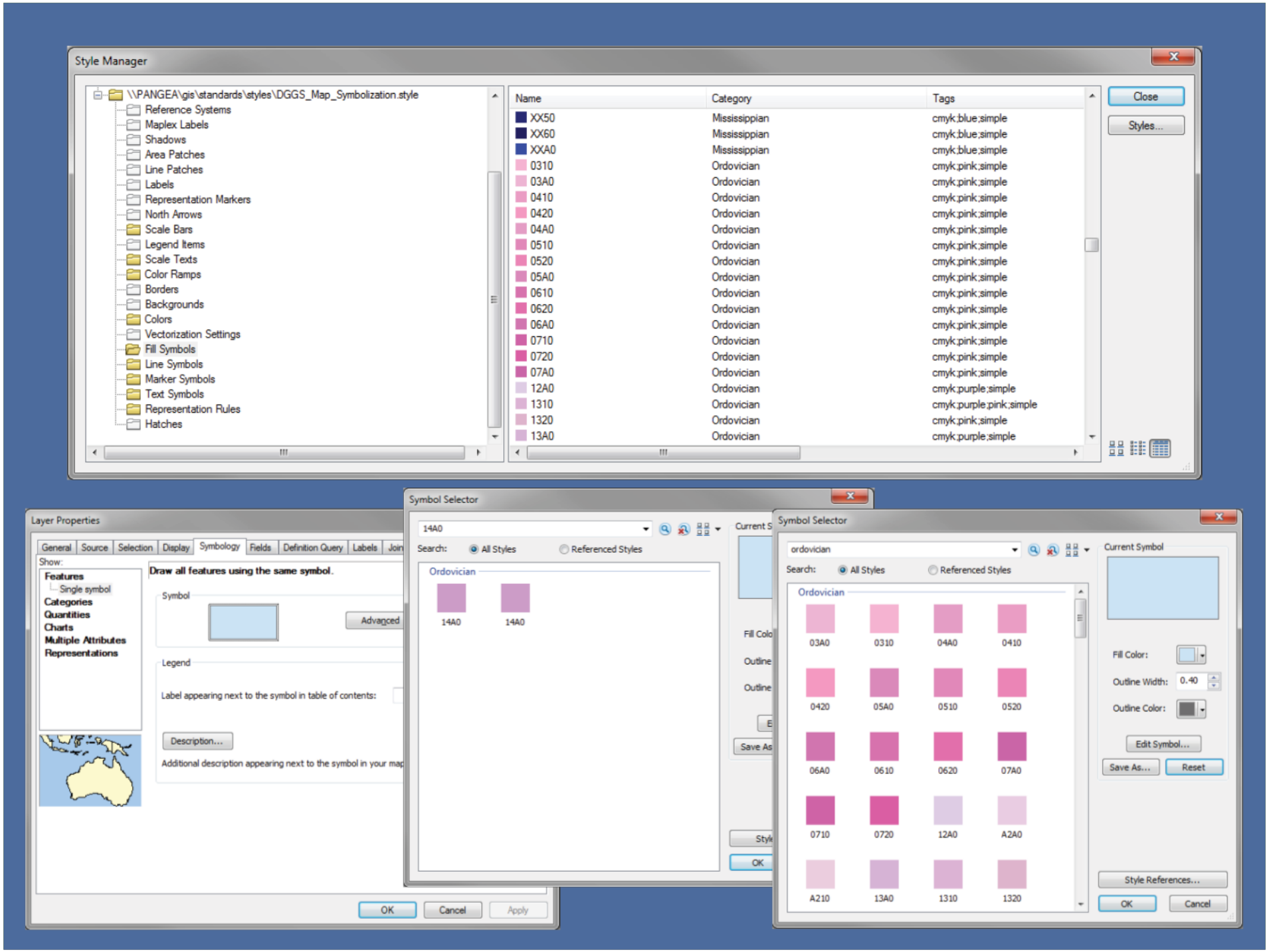
Ordovician
Slate/dull red
O

Cambrian
Reddish brown
€

Precambrian
(Includes Proterozoic and Archean)
Olive brown, olive, gray, olive blue, reddish olive
p€

Igneous and volcanic rocks
Red, pink, bright orange

U.S. Department of the Interior
U.S. Geological Survey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\\PANGEA\gis\standards\styles\DGGS_Map_Symbolization.style
Reference Systems
Maplex Labels
Shadows
Area Patches
Line Patches
Labels
Representation Markers
North Arrows
Scale Bars
Legend Items
Scale Texts
Color Ramps
Borders
Backgrounds
Colors
Vectorization Settings
Fill Symbols
Line Symbols
Marker Symbols
Text Symbols
Representation Rules
Hatches
Name
Category
Tags
XX50 Mississippian cmyk;blue;simple
XX60 Mississippian cmyk;blue;simple
XXA0 Mississippian cmyk;blue;simple
0310 Ordovician cmyk;pink;simple
03A0 Ordovician cmyk;pink;simple
0410 Ordovician cmyk;pink;simple
0420 Ordovician cmyk;pink;simple
04A0 Ordovician cmyk;pink;simple
0510 Ordovician cmyk;pink;simple
0520 Ordovician cmyk;pink;simple
05A0 Ordovician cmyk;pink;simple
0610 Ordovician cmyk;pink;simple
0620 Ordovician cmyk;pink;simple
06A0 Ordovician cmyk;pink;simple
0710 Ordovician cmyk;pink;simple
0720 Ordovician cmyk;pink;simple
07A0 Ordovician cmyk;pink;simple
12A0 Ordovician cmyk;purple;simple
1310 Ordovician cmyk;purple;pink;simple
1320 Ordovician cmyk;pink;simple
13A0 Ordovician cmyk;purple;simple
Close
Styles...
Layer Properties
General
Source
Selection
Display
Symbology
Fields
Definition Query
Labels
Show:
Features
Single symbol
Categories
Quantities
Charts
Multiple Attributes
Representations
Draw all features using the same symbol.
Symbol
Advanced
Legend
Label appearing next to the symbol in table of contents:
Description...
Additional description appearing next to the symbol in your map
OK
Cancel
Apply
Symbol Selector
14A0
Search:
All Styles
Referenced Styles
Ordovician
14A0
14A0
Current Symbol
Fill Color
Outline
Outline
Save As
OK
Symbol Selector
ordovician
Search:
All Styles
Referenced Styles
Ordovician
03A0
0310
04A0
0410
0420
05A0
0510
0520
06A0
0610
0620
07A0
0710
0720
12A0
A2A0
A210
13A0
1310
1320
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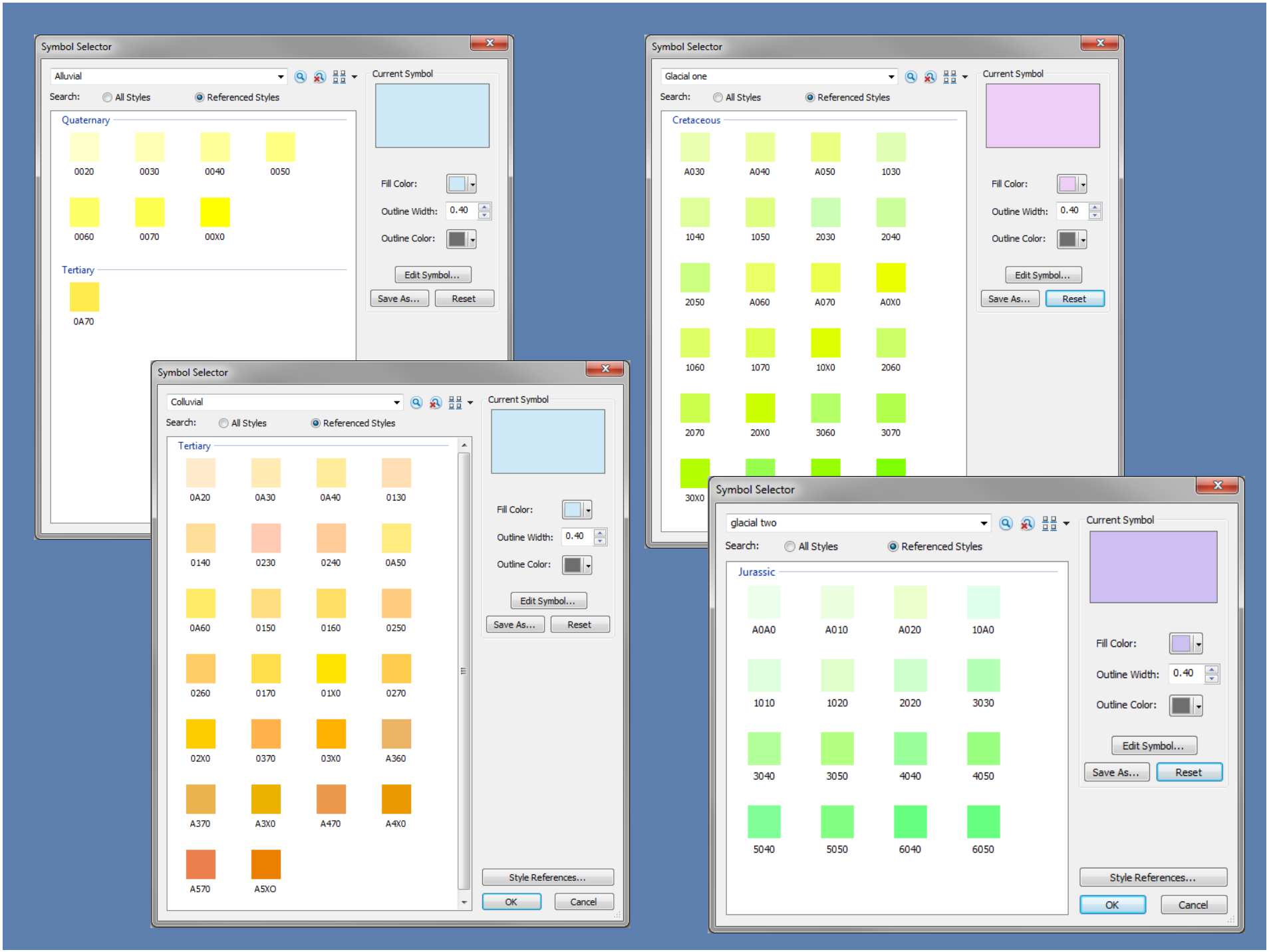
Outline Color:
Edit Symbol...
Save As...
Reset
Style References...
OK
Cancel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Alluvial
Search:
All Styles
Referenced Styles
Quaternary
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0030
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0060
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Tertiary
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Current Symbol
Fill Color:
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0.40
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Save As...
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Symbol Selector
Glacial one
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All Styles
Referenced Styles
Cretaceous
A030
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A050
1030
1040
1050
2030
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A060
A070
A0X0
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3070
30X0
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Fill Color:
Outline Width:
0.40
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Save As...
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Symbol Selector
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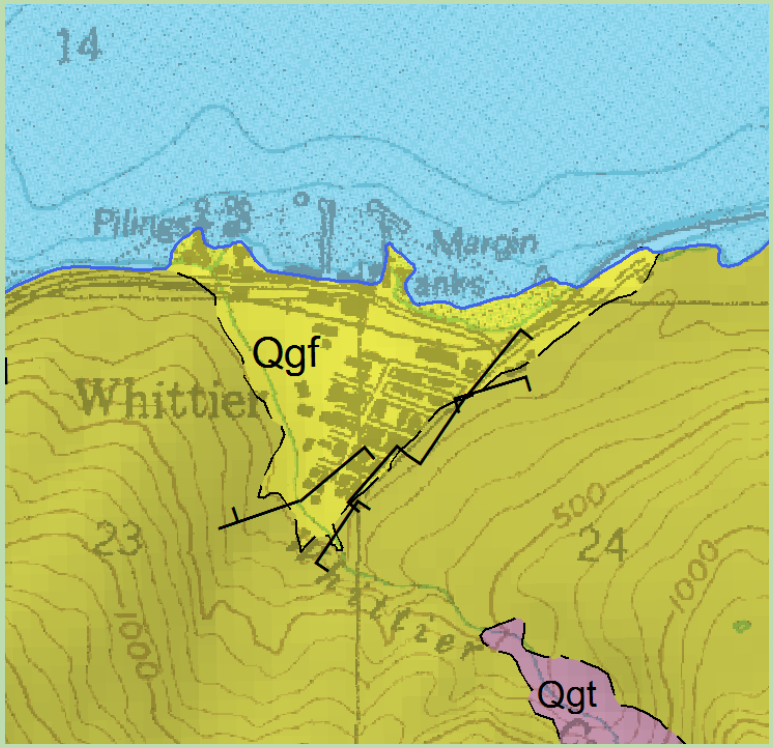
Search:
All Styles
Referenced Styles
Tertiary
0A20
0A30
0A40
0130
0140
0230
0240
0A50
0A60
0150
0160
0250
0260
0170
01X0
0270
02X0
0370
03X0
A360
A370
A3X0
A470
A4X0
A570
A5XO
Current Symbol
Fill Color:
Outline Width:
0.40
Outline Color:
Edit Symbol...
Save As...
Reset
Style References...
OK
Cancel
Symbol Selector
glacial two
Search:
All Styles
Referenced Styles
Jurassic
A0A0
A010
A020
10A0
1010
1020
2020
3030
3040
3050
4040
4050
5040
5050
6040
6050
Current Symbol
Fill Color:
Outline Width:
0.40
Outline Color:
Edit Symbol...
Save As...
Reset
Style References...
OK
Cancel

Representations Rock!

Representations help solve cartographic challenges

Provide greater flexibility and control of map symbology



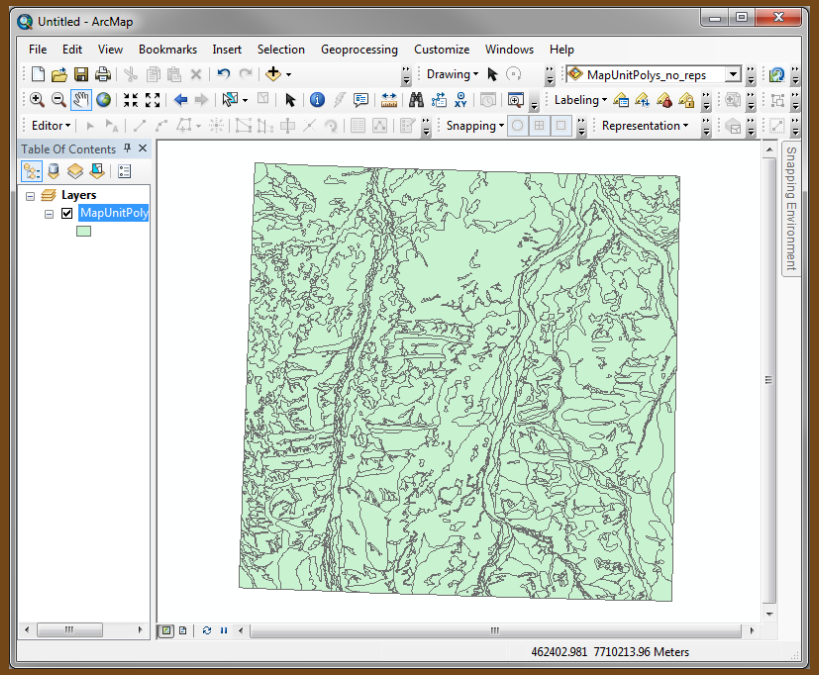
Traditional Symbology

Cartographic Representations

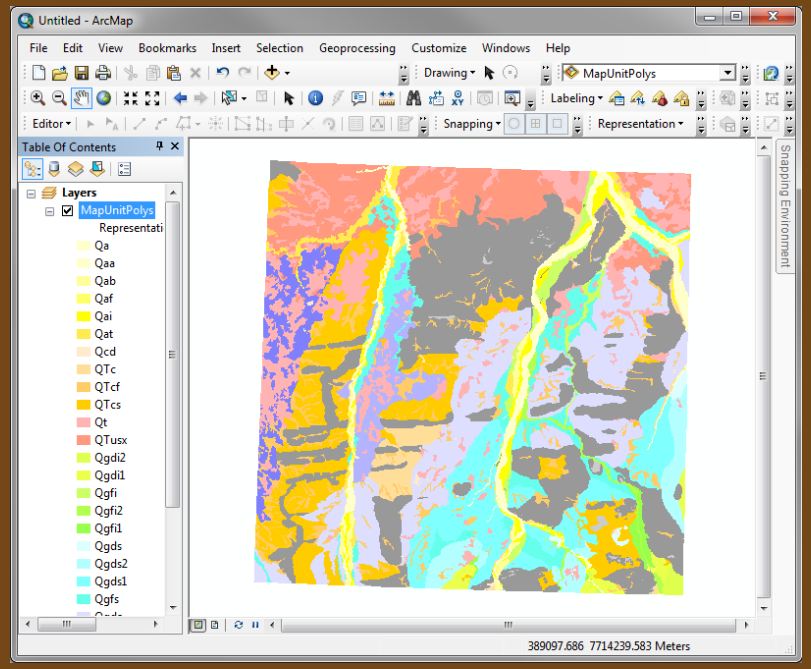
Representations Rock!

Representations help solve cartographic challenges

Store rule-based symbols in the geodatabase along with data

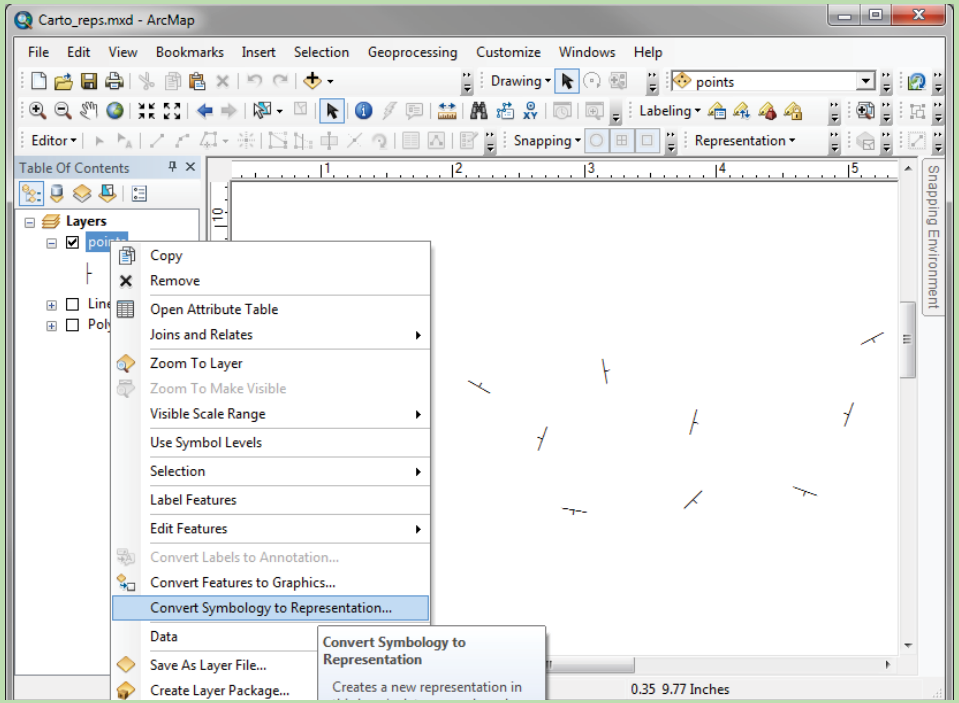


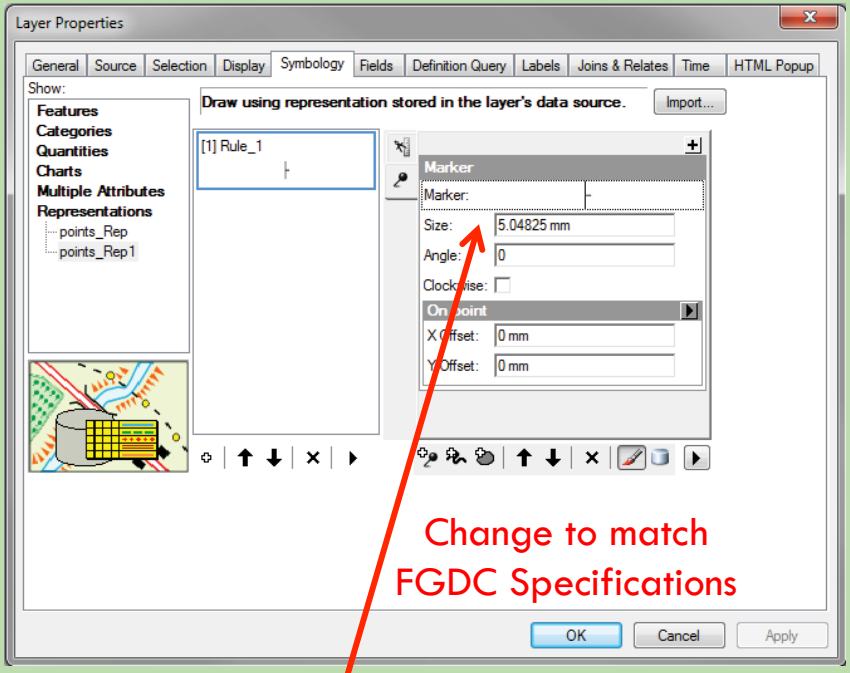
Traditional Symbology



Cartographic Representations

Translating FGDC Symbols Into Cartographic Representations





Change to match FGDC Specifications

Federal Geographic Data Committee
FGDC Digital Cartographic Standard for Geologic Map Symbolization

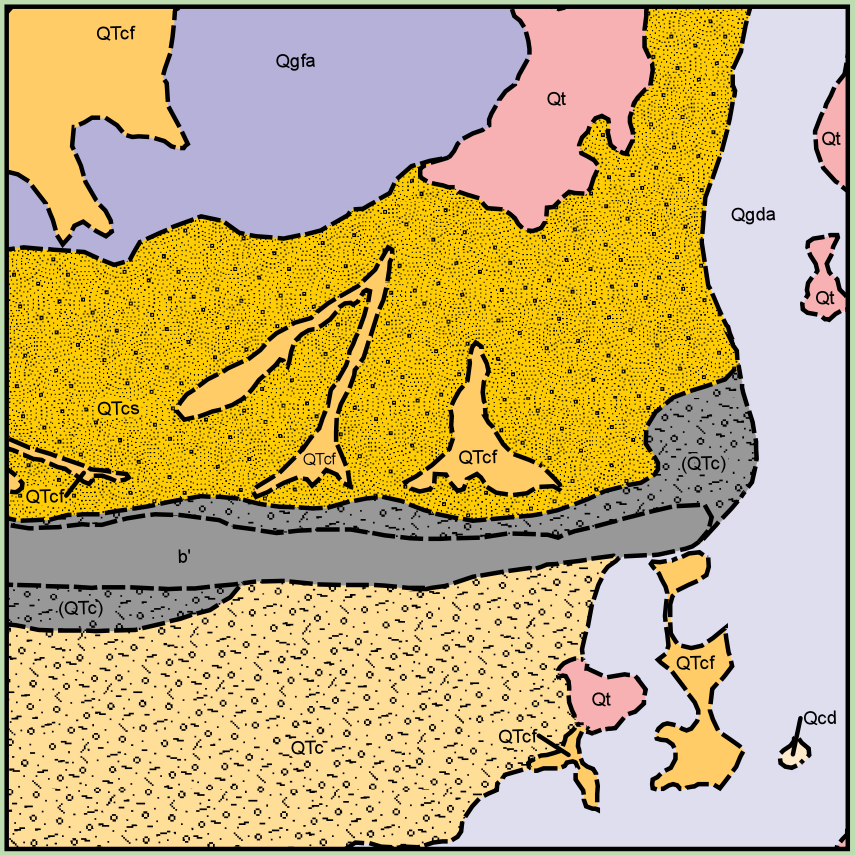
FGDC Document Number FGDC-STD-013-2006
Appendix A

6—BEDDING

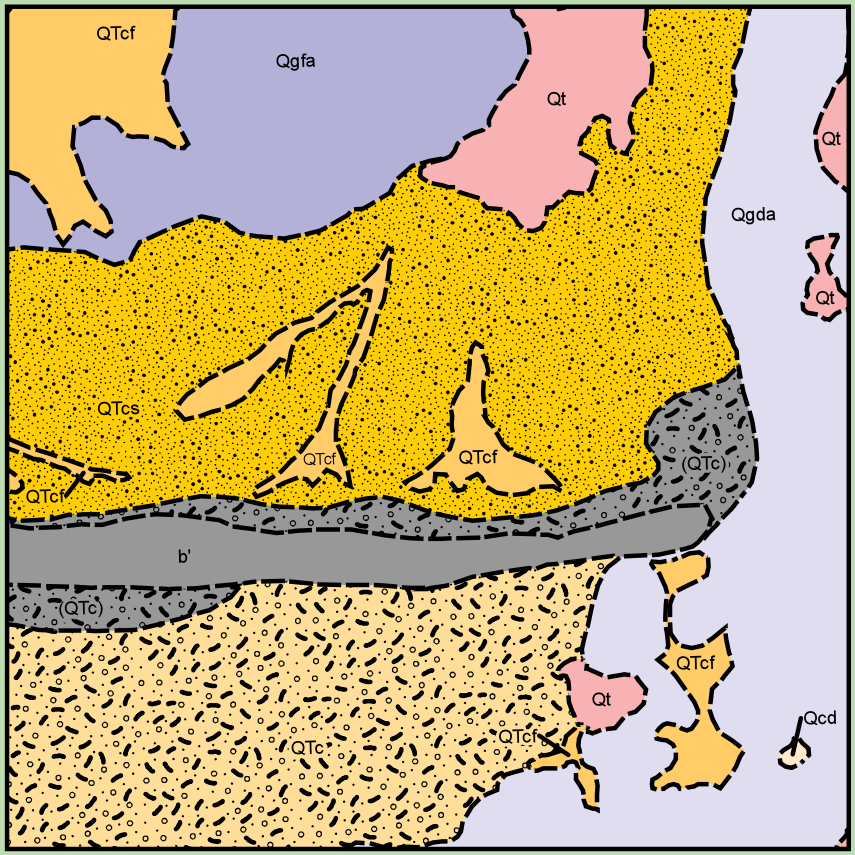
REF NO	DESCRIPTION	SYMBOL	CARTOGRAPHIC SPECIFICATIONS*	NOTES ON USAGE*
6.1	Horizontal bedding	⊕	all line weights .2 mm; ⊕ circle diameter 2.5 mm	Inclined (upright) and overturned bedding symbols are used when the top direction of beds is known to a reasonable degree of certainty. On maps where determination of top direction
6.2	Inclined bedding—Showing strike and dip	40	1.0 mm; 40; 5.0 mm; HI-6; all line weights .2 mm	

Patterns as Representations

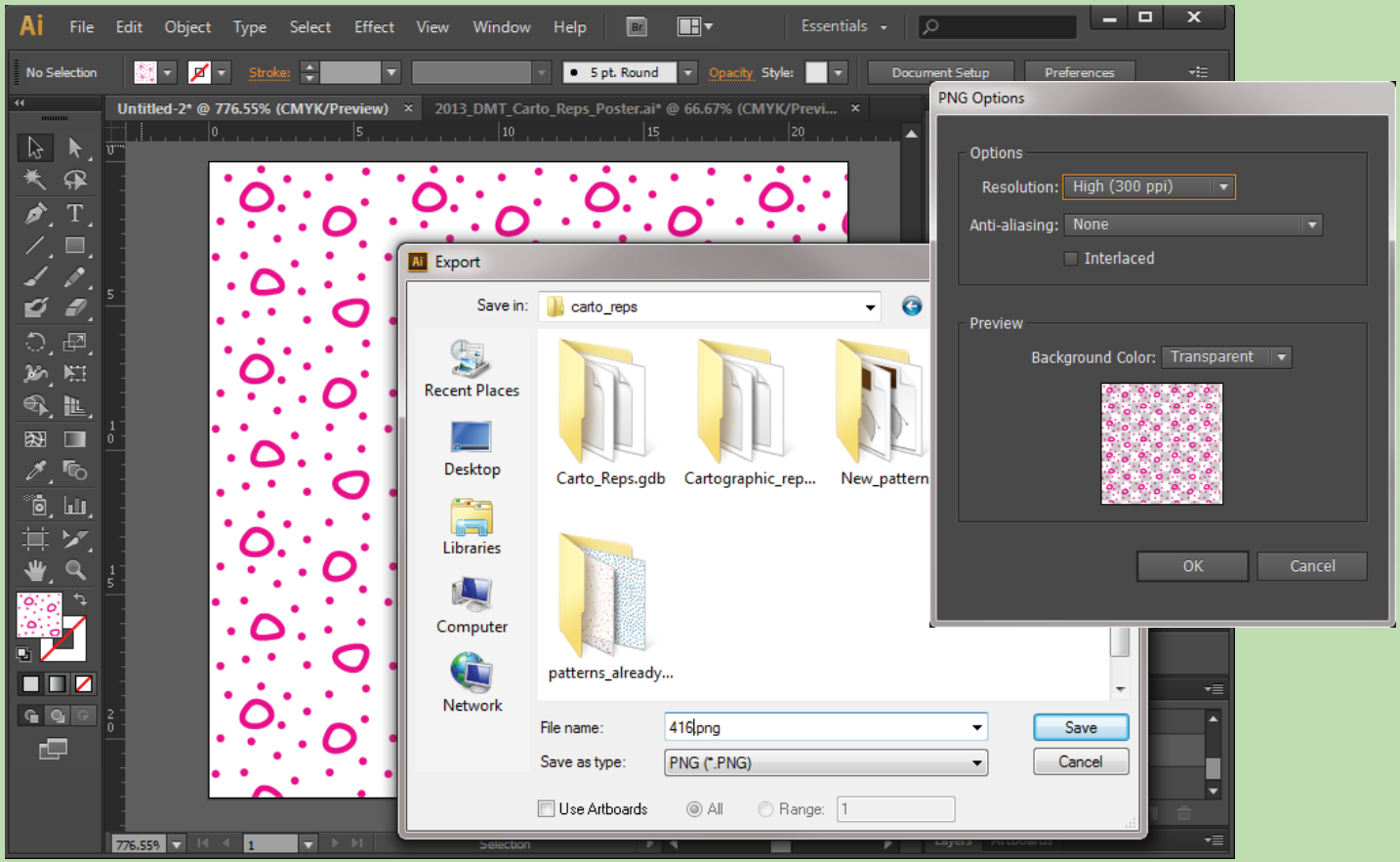
Pattern from Esri Geology 24K style file



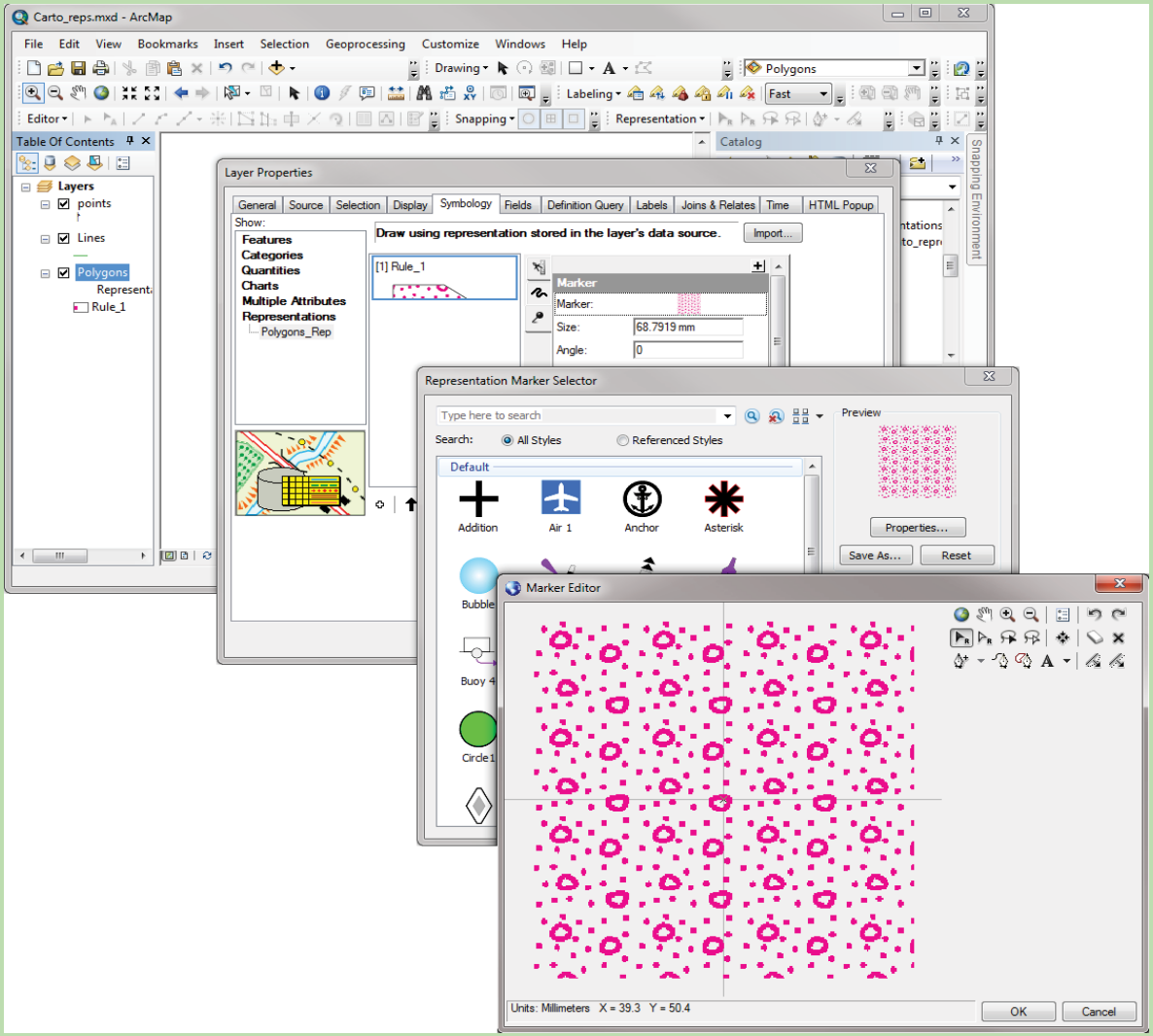
Patterns as cartographic representations



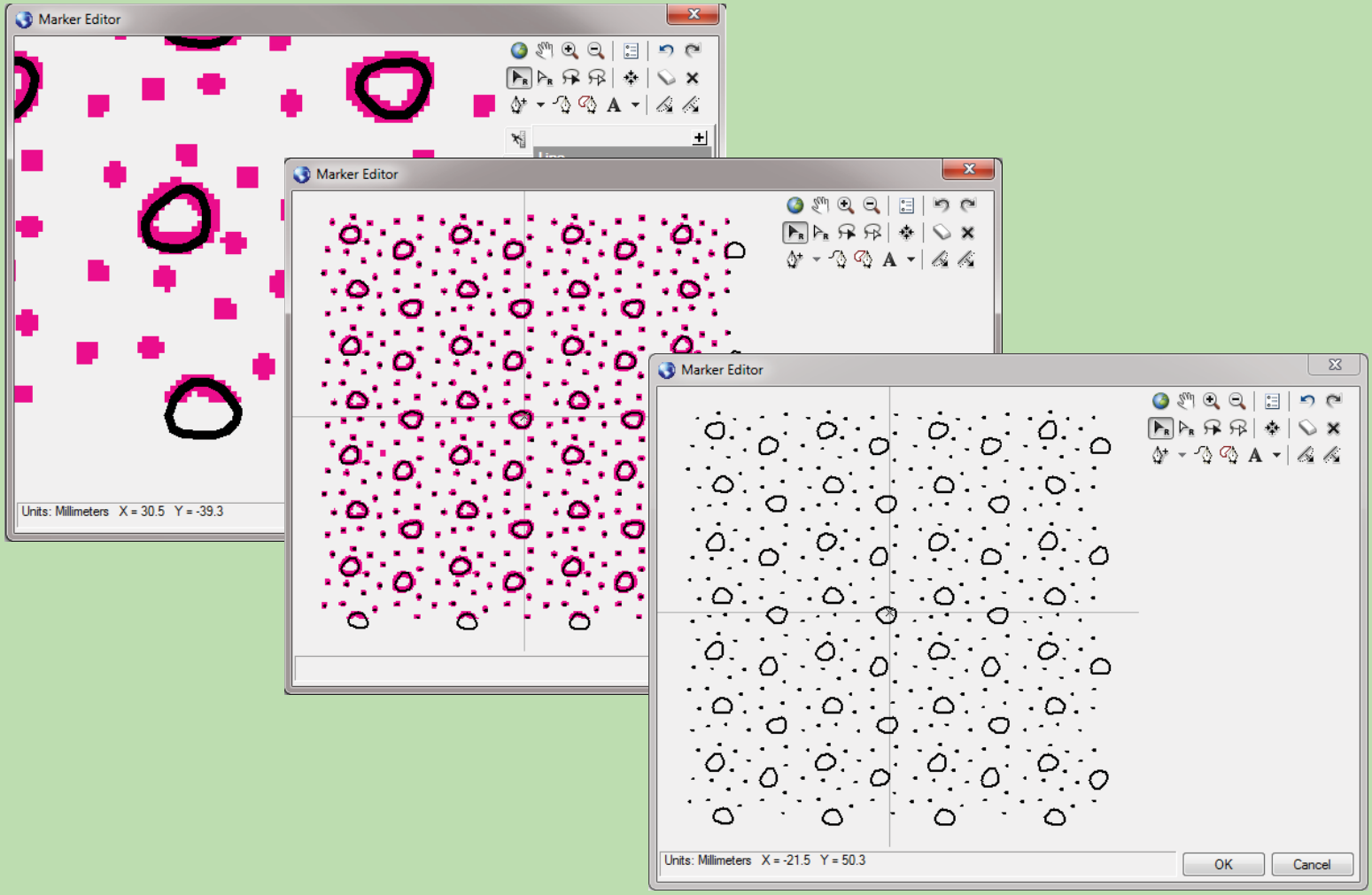
Creating Pattern Fill Representations From Scratch



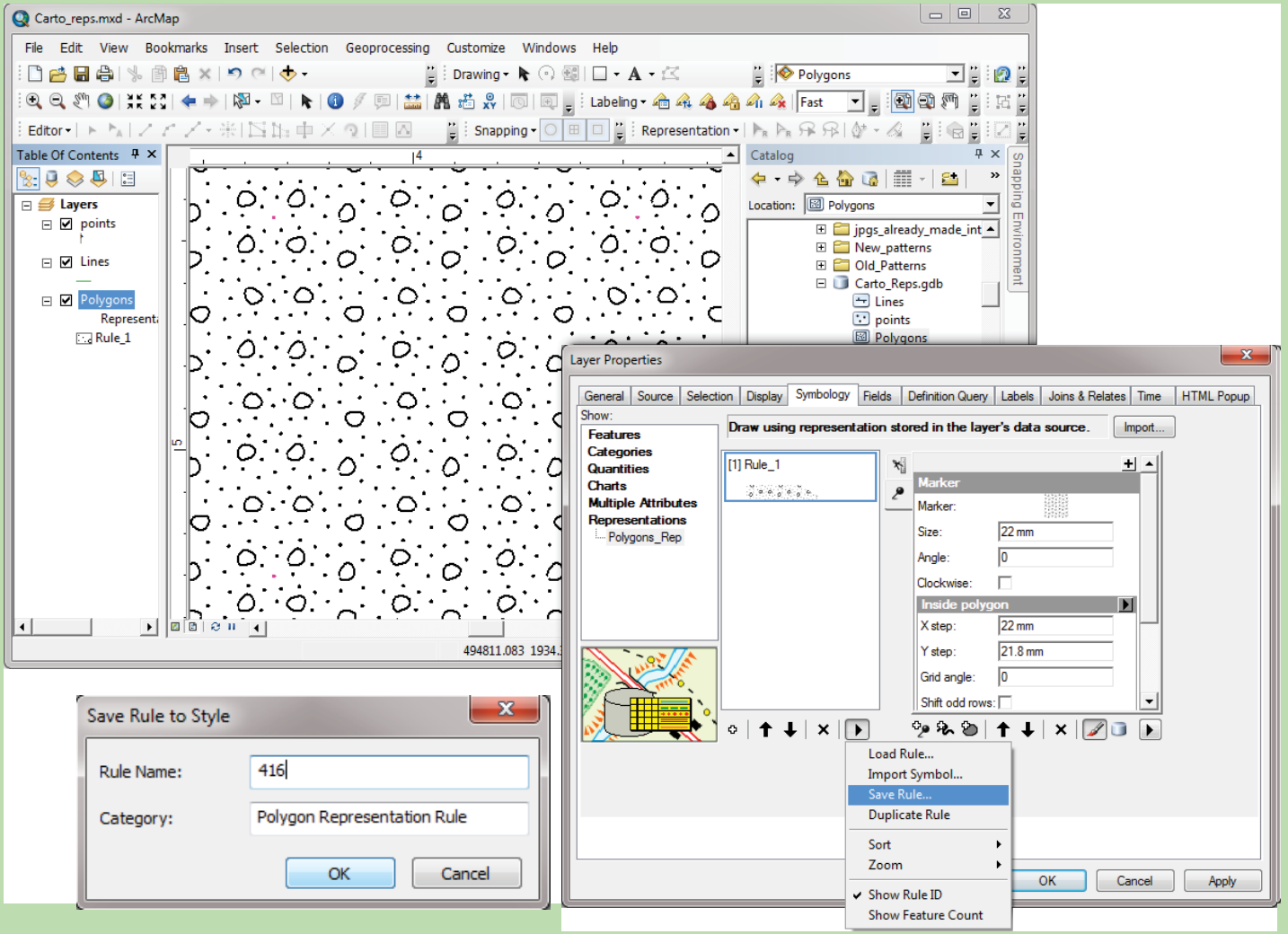
Creating Pattern Fill Representations From Scratch

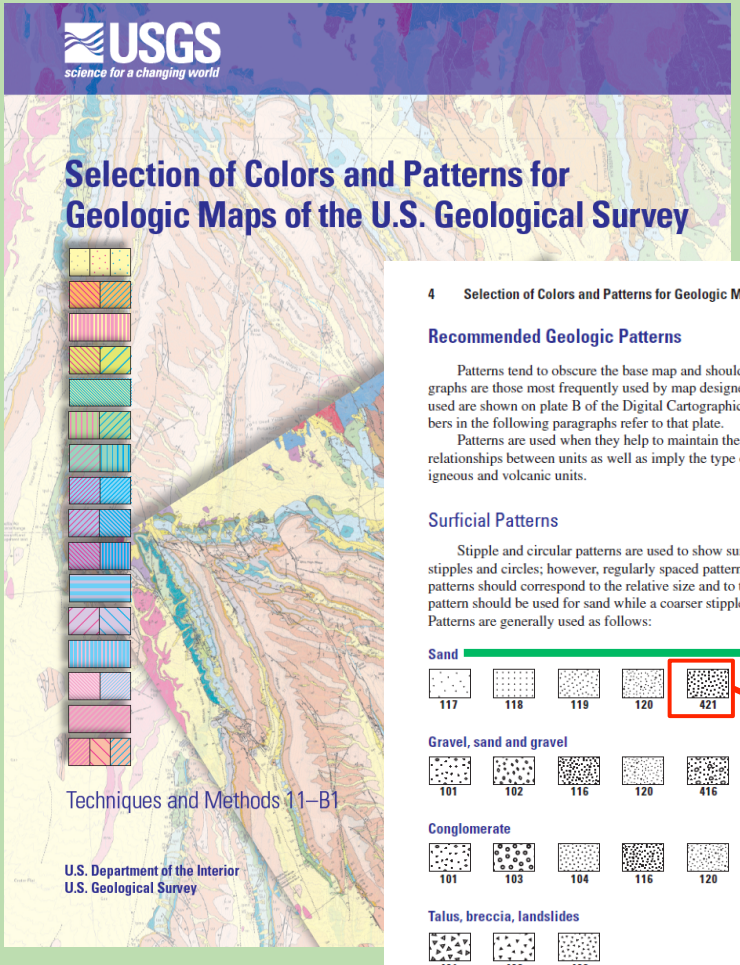


Creating Pattern Fill Representations From Scratch



Creating Pattern Fill Representations From Scratch





Recommended Geologic Patterns

Patterns tend to obscure the base map and should be used only when necessary. The patterns shown in the following paragraphs are those most frequently used by map designers in the USGS. These patterns and many others that are less frequently used are shown on plate B of the Digital Cartographic Standard (see http://pubs.usgs.gov/of/1999/of99-430/). The pattern numbers in the following paragraphs refer to that plate.

Patterns are used when they help to maintain the basic color scheme on complex maps; they often can effectively show relationships between units as well as imply the type of rock being represented. Patterns are most often used for surficial and for igneous and volcanic units.

Surficial Patterns

Stipple and circular patterns are used to show surficial deposits. Normally these patterns have a random arrangement of stipples and circles; however, regularly spaced patterns may be used to create contrast among units. Generally, the spacing of the patterns should correspond to the relative size and to the character of the material being represented. For example, a fine stipple pattern should be used for sand while a coarser stipple pattern with or without circles indicates a coarse gravel or conglomerate. Patterns are generally used as follows:

Sand

117 118 119 120 421

135

Gravel, sand and gravel

101 102 116 120 416 427 428 429

Conglomerate

101 103 104 116 120 416 427 428 429

Talus, breccia, landslides

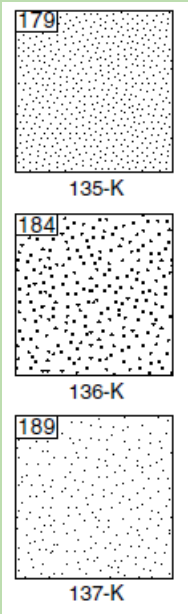
401 402 403

595

591

Glacial moraine

101 102 103 116 416 427 428 429 506 507



QUESTIONS

This geocaching corgi can't wait to get home and turn his data into a map with a standardized format!

Thank you DMT organizers and participants!